

## Verbs of Remembering

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This paper discusses in the Case Grammar framework a family of verbs expressing an Experiencer's cognitive activity in which his previous associations are "called to mind" by his own efforts or by some external Agent or Instrument. These verbs have surface realization in the forms call to mind, remember, remind, recall, reminisce, and recollect. The paper rather informally assumes that "call to mind"<sup>1</sup> is the pre-lexical verbal element for each

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<sup>1</sup>This form was chosen because of its correspondence with the surface verb call to mind. The exact designation is trivial, though the presuppositions involving the Experiencer and his previous association with the Object (see p.57) are crucial.

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of these surface forms in order to present them all in an identical case frame from which certain nodes must be deleted or in which others may be null. Before lexical insertion, however, the particular verb is realized in the deep structure; its choice is determined by the case frame configuration and by the particular "lexical focus" of the sentence. The paper is not, however, an exercise in generative semantics, since it focuses on the syntactic component, assuming the proper lexical item in its proper case frame as input. The informal claim of an underlying verb in the pre-lexical component reveals the general similarities of this family of verbs, while it shows by contrast the unique syntactic property of each particular surface verb.

### I. The Case Frame and the Experiencer Conspiracy

Consider first the surfacing of the underlying verb itself in the following two sentences:

(1) a. For them, the photo called to mind last year's  
          E                  1  
                  visit to Kyoto.  
                          0

b. Using only hastily scribbled notes, Oscar called  
                          I                          A  
                  to mind the entire argument.  
  0

The contrasting case frames, [-EIO] and [-AIO] manifested here, suggest that the verb in (a) is different from that in (b), since the person (E) in the first sentence is a passive entity upon which the Instrument works to elicit some cognitive reaction, while in the second the action results from a conscious effort on the same person's part.<sup>2</sup> More interesting generalizations are

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<sup>2</sup>The Agentive nature of the subject of (b) will be justified below, pp.

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possible, however, by rejecting this limited view of two distinct verbs in favor of one in which the two verbs are the same, differing only in their surface manifestations as dictated by the case frame in which they appear. Viewed in this way the two sentences together contain the sum of the five cases found in the sentences above. Thus the full case frame for this verb may be posited as [-AEIO].

Since neither sentence above contains all of these case nodes, a problem arises as to which case nodes may be deleted and under what circumstances. Since both sentences contain Object case elements, the appearance of this element seems to be obligatory. Experiencer, on the other hand, appears to vary with Agent. That I is also optional in the full case frame can be seen by reading (1b) without this element.<sup>3</sup> To express these options, parentheses

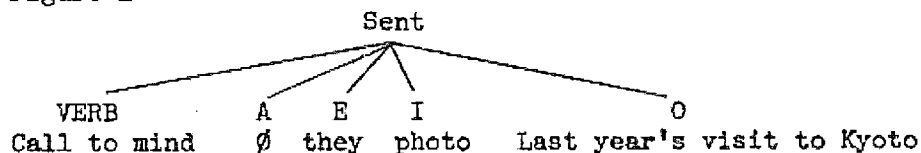
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<sup>3</sup>The complex relationship of Instrument to Agent by means of which the former is optional in either case frame will be explained below.

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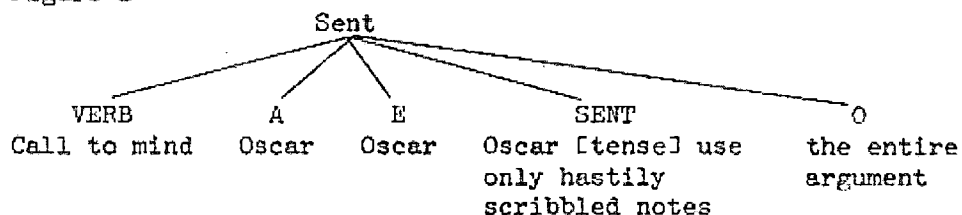
may be added to the case frame of call to mind as follows: [--(A)E] (I) O]. Plain parentheses indicate freely optional elements and linked parentheses (between A and E) indicate that one or the other element must be present. Thus, (1a) is derived from the following deep structure:

Figure 1



Likewise, (1b) has a similar structure, except that both the Agent and the Experiencer nodes are filled:

Figure 2



Plainly, some Experiencer must always be present in the deep structure of sentences such as (1b), even though they do not appear on the surface--the Experiencer is the one to whose mind some idea must be called. In Romance languages this case always appears in the surface structure, since the "call to mind" verbs are reflexive (*recordarse*, *se rappeler*, etc.). In English this case explains such sentences are:<sup>4</sup>

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<sup>4</sup>The complex behavior of the Experiencer in this family of verbs is one of the focal points of this paper. As additional data is presented, further observations on its required appearance and resulting behavior will be made. For example, additional motivation for always positing an Experiencer is found in the presuppositions which underlie the family of verbs under discussion. See below, p. 57.

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(2) Peter reminded Dave of the meeting.  
           A                          E                  O

For those verbs such as *remember* and *recollect* and sometimes *call to mind* and *recall* in which the Experiencer must not appear in the surface structure, the verb must be marked to undergo the following rule:

Rule 8.<sup>5</sup> REQUIRED COREFERENCE DELETION<sup>6</sup>  

$$\begin{array}{c} V \\ [C_i = C_j] \quad C^* C_j X \\ \quad 1 \quad \quad 2 \quad 3 \quad 4 \end{array} \Rightarrow 1 \ 2 \ \emptyset \ 4$$

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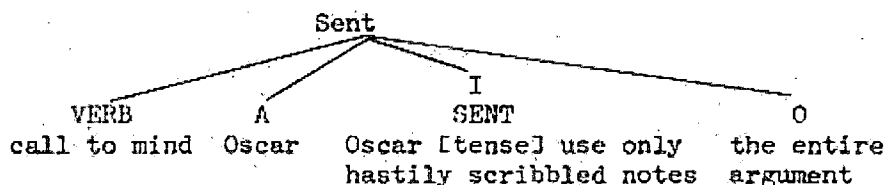
<sup>5</sup>Rule numbering in the text reflects the ordering of the rules in the Summary of Rules (i.e., the order necessary for a derivation) rather than the ordering of their appearance in the text.

<sup>6</sup>This rule, along with several others discussed in this paper, was given by Professor Charles Fillmore in his classes at the 1970 Linguistic Institute at The Ohio State University.

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Figure 4



In Figure 4, in which the Agent is expressed and conceived to be the real source of the cognitive act, the presupposition of this surface verb is unmistakable--that the Experiencer must have had previous association with the Object to be recalled. Notice that if this were not the case, the Experiencer could not act as Agent to recall to himself the information by his own volition. In contrast, any other means of bringing an idea to mind must involve some suggestion or demonstration by an Agent not equivalent to the Experiencer (possibly with the addition of an Instrument). This presupposition clearly distinguishes the class of verbs discussed in this paper from a second group, also meaning "call to mind," in which the ideas elicited in the Experiencer are not those of previous associations. This second family of verbs includes such surface forms as suggest, realize, perceive, demonstrate, illustrate, prove, think about, and conjure. The distinction between the two families is clear in the following pairs of sentences:

- (5) a. This fragrance reminds me of Paris.  
 b. This fragrance makes me think of Paris.

The verb in the first sentence presupposes some past associations with the Object which brings an idea to the Experiencer's mind (in this case a Parisian fragrance); the second on the other hand, makes no such presupposition. This difference is even clearer in negative sentences:

- (6) a. Homer did not remember to turn out the lights.  
 b. Homer did not think to turn out the lights.

Homer clearly intended to turn out the lights (i.e., had some past associations with the object), but forgot. No such intention (i.e., past association) is implicit in (6b), and thus the two families of verbs divide sharply with respect to their presuppositions.<sup>8</sup> Though

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<sup>8</sup>Notice that in this respect, forget is quite similar to the "call to mind" verbs; though its careful examination is beyond the scope of this paper, this verb behaves very much like remember.

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somewhat more subtle, the presupposition of the Experiencer's previous acquaintance with the content of the Object case node is also present in sentences such as (1a) in which the Agent node is null. In this second manifestation, some aspect of the Instrument accords with some previously encountered aspect of the Object in such a way that one suggests the other. This concord between Instrument and Object is always implicit in this sense of the "call to mind" verbs; even when no Instrument is present, as in

(7) Jan reminded Pete to go to the store.

In such zero-Instrument cases, some unexpressed verbal Instrument must be implicit. Though not unique to this family of verbs, an obvious result of this concordance between Instrument and Object is that the Instrument and Agent nodes cannot both be null.

This presupposition of the "call to mind" verbs helps to explain the peculiar behavior of the Experiencer in this frame. Some filler for this node is necessary as a reference as to whose mind an idea is called. This idea is so central to the concepts embodied in the verb itself, however, that the appearance of any other element downgrades the Experiencer below its normal position in the hierarchy. Consider, for example, its behavior in (1a). Since the basic principle of Subject Formation within the case grammar framework is that of selecting the case highest in relative importance (see Rules 11-14 below, p. 60), the Experiencer should be selected as subject whenever the deep structure does not contain an agent (see Figure 1, p. 54, for a representation of the deep structure of this sentence). Instead of this procedure taking place, however, the Experiencer is downgraded by the following rule:

Rule 9. EXPERIENCER SHUNTING<sup>9</sup>

|   |   |   |   |      |             |
|---|---|---|---|------|-------------|
| V | E | X | ⇒ | sent | sent        |
| 1 | 2 | 3 |   | [    | [ 1 3 ] 2 ] |

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<sup>9</sup>Fillmore, 1970

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A subsequent rule may even delete a shunted Experiencer. The important point, however, is that this rule is another in the conspiracy against the Experiencer of "call to mind" verbs.

The surface verbs call to mind and recall allow both senses in which this family of verbs can be understood--that in which the Experiencer calls some idea to mind by a conscious effort and that in which the Experiencer is passive in this process. For this reason, these two verbs allow a choice of treatments of the Experiencer by either Required Coreference Deletion (Rule 8) or by Experiencer Shunting (Rule 9). Other verbs in the family distinguish themselves



Rule 11. ACCUSATIVE MARKING<sup>11</sup>

$$\begin{array}{ccc} \text{V} & \text{C}^* & \text{Y} \\ 1 & 2 & 3 \end{array} \Rightarrow \begin{array}{ccc} & \text{acc} & \\ 1 & [2] & 3 \end{array}$$

Condition:  $C_i = E, O, G$  (in order)

<sup>11</sup>As a general convention, asterisks indicate "one or more"; in conjunction with parentheses, as in (X)\*, the convention can mark "null, one, or more."

## Rule 12. NOMINATIVE MARKING

$$\begin{array}{ccc} \text{V} & \text{C} & \text{Y} \\ 1 & 2 & 3 \end{array} \Rightarrow \begin{array}{ccc} & \text{nom} & \\ 1 & [2] & 3 \end{array}$$

## Rule 13. SUBJECT FORMATION

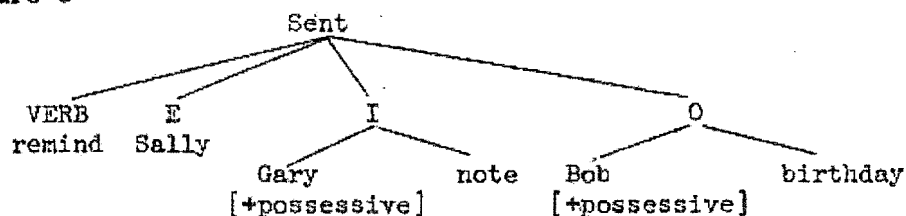
$$\begin{array}{ccc} \text{sent} & & \\ [ \text{V} & \text{NOM} & \text{X} ] \\ 1 & 2 & 3 \end{array} \Rightarrow \begin{array}{ccc} \text{sent} & \text{sent} & \\ [ 2 & [ 1 & 3 ] ] \end{array}$$

## Rule 14. OBJECT FORMATION

$$\begin{array}{ccccc} \text{NOM} & \text{V} & (\text{C}) & \text{ACC} & \text{X} \\ 1 & 2 & 3 & 4 & 5 \end{array} \Rightarrow \begin{array}{ccccc} & \text{V} & & & \\ 1 & [ 2 & 4 ] & 3 & 5 \end{array}$$

Since the cases are ranked in left to right order, in Figure 5, the effect of rules 11-14 is to choose and to convert to the object of the verb the second case to the right if it is the Experiencer, Object, or Goal case. Subsequently the first case to the right of the verb is chosen as the subject. Consider now the effect of this derivation on the deep structure of (8e):

Figure 6



Here the application of the rules above will map the Object case into the direct object of the verb and the Experiencer into the subject, giving the ungrammatical string:



- (9) \*Sally reminded Bob's birthday by Gary's note.  
           E                                  O                                  I

With the proper verb (e.g., remember), the Object can become the direct object and the Instrument frequently appears as a prepositional phrase. Thus the ungrammaticality results from making the Experiencer the subject of the verb--a derivation which never occurs in this family of verbs. That this ungrammaticality of Experiencer subjects is not a general condition is shown by such sentences as:

- (10) a. Mike feels sick.  
           E  
       b. Mary enjoyed the movie.  
           E

To block the ungrammatical sentence in (9) the verb may be marked for application of the independently motivated Psych-Movement transformation:<sup>12</sup>

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<sup>12</sup>Fillmore, 1970.

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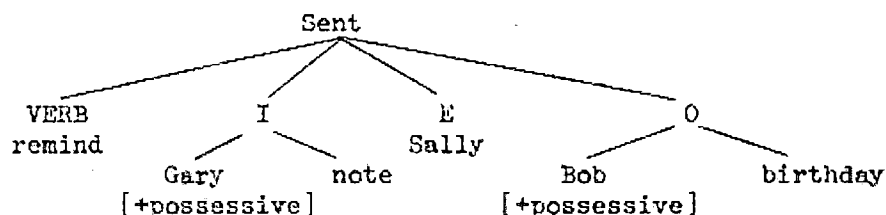
#### Rule 10. PSYCH-MOVEMENT

V E C X

1 2 3 4     $\Rightarrow$     1 3 2 4

If this rule is applied to the deep structure in Figure 6 before the rules of subject and object formation, the Experiencer and Instrument will be "flipped" to give the following input to Rules 11-14:

Figure 7



With this input, Rules 11-14 will assign the grammatical relations necessary to realize the surface sentence (8e). Note that Psych-Movement will not apply if an Agent is present, since that case is the first to the right of the verb, and the string will no longer fit the rule's structural description (for example, see Figure 5). Thus marking the verb remind [+Psych-Movement] will result in no

ungrammaticality even when an Agent is present. This neat bit of formalism may obscure the fact that in the case of zero-Agent, Psych-Movement is part of this verb family's general conspiracy against Experiencer subjects.

## II. Embedding

Embedding in the Instrument and Object positions is possible, as the following examples show:

- (11) a. By writing himself a note, John remembered  
 $\begin{array}{ccc} I & & A \\ & & \\ & & \end{array}$   
to purchase the groceries.  
 $\begin{array}{c} O \end{array}$
- b. By his tying a string on his finger, Fred remembered  
 $\begin{array}{ccc} I & & A \\ & & \\ & & \end{array}$   
that he had to pick up his car.  
 $\begin{array}{c} O \end{array}$
- c. By writing her a note, Mortimer reminded Sally  
 $\begin{array}{ccc} I & & A \\ & & \\ & & \end{array}$   
to go to the bank.  
 $\begin{array}{c} O \end{array}$
- d. That Henry lost five dollars reminded Oscar  
 $\begin{array}{ccc} I & & E \\ & & \\ & & \end{array}$   
to check his own wallet.  
 $\begin{array}{c} O \end{array}$
- e. It recalled her own high-school days for Judy to  
 $\begin{array}{ccc} & & \\ & & O \end{array}$   $\begin{array}{ccc} & & I \\ & & \\ & & \end{array}$   
see the homecoming queen.
- f. Judy recalled meeting the boy last summer.  
 $\begin{array}{ccc} A & & O \\ & & \\ & & \end{array}$

Conditions on what types of sentences may be embedded seem to be largely semantic, except for rather interesting syntactic identity constraints. The former considerations are so complicated by the wide range of associative processes which may be instrumental in jogging one's memory and by the entire scope of things one may be reminded to do as a result, that few generalizations on semantic well-formedness seem possible. The syntactic identity conditions, however, can be generalized in ways which further confirm the case frame analysis proposed for this family of verbs. In all of the examples above, if an Agent appears in the surface sentence, the subject of the embedded Instrument Clause must be identical to it. This interrelationship between Agent and Instrument corresponds to the hierarchy of the two cases manifested in the obligatory selection of Agent as subject if one is present, and the alternative choice of Instrument for that function if the Agent has been deleted.

That clauses embedded in the Object position must have a subject identical to the Experiencer in the higher sentence can be seen most clearly in (11d). This identity is more general, however, than this sentence alone may indicate. Even though the Experiencer must be deleted in the case of remember (as in (11a)) and recall (11f), the embedding Transformation may occur before this deletion, at a point where this reference is still available.<sup>13</sup> The additional

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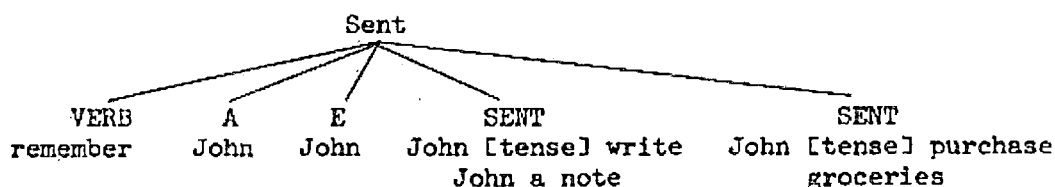
<sup>13</sup>This is not a strong argument for ordering, due to the identity mentioned below. Thus, its main effect is to simplify Required Coreference Deletion.

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identity condition between Agent and Experiencer for this verb reveals the accuracy of this analysis, since the subject of the embedded Object will obviously agree with the Agent of the higher sentence as well. Thus the apparent identity between the subject of the Object clause and the Agent of the higher sentence is a reflex of a deeper, more complex series of identities. This fact provides still further motivation for positing a full case frame for all the verbs of this family, even though some of the nodes may be null or subsequently deleted.

Except in the case of modal clauses embedded in the Object position (e.g., 11b) and in the cases of Instrument clauses embedded in sentences where the Agent case node is null (e.g., 11d), all of these embedded sentences must be modified before they reach their surface form. Consider, for example, the following deep structure of (11a):

Figure 8



A series of related transformations will be necessary to convert the verb of the Instrument clause to a nominal form (either a gerund or a verbal noun) and the verb of the Object clause to an infinitive. In addition, the subject noun of the Instrument clause must either be made possessive or deleted, while the subject of the Object clause must be deleted. The first step in these derivations is the erasure of tense in each of the embedded clauses by the following rule:

Rule 1. TENSE ERASURE

Cq sent  
 [ [ NP [TENSE] V X ] ]  
     1    2    3 4           ⇒ 1 Ø 3 4



Note that the lack of a tense marker is a necessary condition of the structural description of this rule, as explained above. This rule is optional in Object clauses of sentences containing verbs marked for Required Coreference Deletion (Rule 8) of the Experiencer, and for Instrument clauses of sentences with zero Agent. Just in case an Agent is expressed, the rule is obligatory for Instrument clauses, and just in case the Experiencer is not marked for Required Coreference Deletion, the rule is blocked in Object clauses.<sup>16</sup>

<sup>16</sup>I am not sure how to formalize these conditions, especially regarding the relationship of this rule to Required Coreference Deletion, where it appears I am missing a generalization. Obviously, these conditions are closely linked to the syntactic identity conditions on embedding.

With the tense marker erased, the embedded verbs can no longer take a subject. Therefore, the following three rules together must establish the proper grammatical relation between the remaining NP and the modified verb (by raising it, Rule 3 below, or by making it possessive, Rule 4). If neither of these two options is taken, the NP must then be deleted. The three rules for these operations are as follows:

Rule 3. SUBJECT RAISING I.

$$\begin{array}{c} \text{Cq sent} \\ [ \quad [ \text{NP V X} ] ] \\ \quad \quad 1 \quad 2 \quad 3 \end{array} \Rightarrow \begin{array}{c} \text{Cq sent} \\ [ \quad [ 1 [ 2 3 ] ] ] \end{array}$$

Rule 5. POSSESSIVE FORMATION

$$\begin{array}{c} \text{Cq sent} \\ [ \quad [ \text{NP V + } \underline{\text{ing}} \text{ X} ] ] \\ \quad \quad 1 \quad 2 \quad 3 \end{array} \Rightarrow 1 + [\text{POSSESSIVE}], 2, 3$$

Rule 6. EQUI-NP DELETION

$$\begin{array}{c} \text{Cq} \quad \quad \text{Cq sent} \\ \underline{[\text{NP}_1] \text{ X}} \quad [ \quad [\text{NP}_2 \text{ V}(+\underline{\text{ing}}) \text{ Y} ] ] \\ 1 \quad \quad \quad 2 \quad \quad 3 \end{array} \Rightarrow 1 \emptyset 3$$

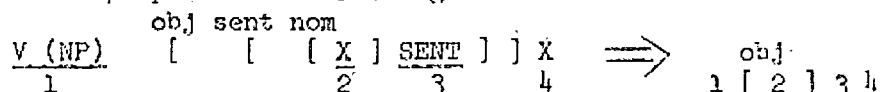
Conditions:  $\text{NP}_1 = \text{NP}_2$

$\text{NP}_2 \neq [+POSSESSIVE]$

By Chomsky adjunction, Rule 3 simply raises the NP from its subject position as the first of several steps which seem necessary to

accomplish more complex subject raising than proposed here. For sentences such as "John seems to be sick", Raising Rule II<sup>17</sup> would

<sup>17</sup> Fillmore proposes the following:



would make the noun the sole representative of its case node and yet another Raising Rule III would then be necessary to attach the remaining complement (this complementizer placement rule may fall together with an Extraposition Rule). Raising Rule I above would feed this sequence (and must be so ordered), as well as providing a unique structure to all subsequent rules and thus relate each of the three steps in the raising process. Note especially that this rule does not separate the subject NP and its complement to such an extent that extraposition is possible (as would be the case in Raising Rule II). It is equally important that the output of the Gerund Formation Rule (Rule 2) does not fit the Structural Description required for Raising. The ultimate realization of the verb in sentences with raised subjects (and, as a precondition, deprived of tense markers) is as infinitives by Rule 7 below. In this manner, the tenseless verb is guaranteed two distinct surface realizations--as a gerund or as an infinitive (the second form can also be derived by deleting the subject, as shown below).

For "call to mind" verbs Raising Rule I is limited to optional application to Instrument clauses in sentences without Agent.<sup>18</sup> The

<sup>18</sup> Raising Rule I is independently motivated, however, by other sentences in which the infinitive complement cannot be extraposed from the raised noun, as in:

For Frank to finish the job seemed impossible.

severe limitations on Raising Rule I for "call to mind" verbs are apparently due to the identity conditions existing between the Agent and Experiencer and the subjects of the embedded clauses (these conditions are discussed above, p. 54). For example, note that realization of a "subject" (even in raised position) might be confused with the obligatorily deleted Experiencer in remember:<sup>19</sup>

<sup>19</sup> The exact nature of these identities and deletions is not clear enough to be formalized. Why, for example, is the infinitive form itself (with or without a raised "subject") blocked in the Instrument clause when an Agent is present, but allowed when the A-node is null as in:

For Adam to see Ginger in her wedding gown recalled to him his own wedding day.

See also the discussion of syntactic constraints on embedding, p.

- (12) \*Cynthia remembered (for) her(self) to pick up her new dress.

Rule 2, above, is self-explanatory--it simply forms a possessive before gerunds. The rule is optional and completely general. If neither Raising Rule I or the Possessive Formation Rule is applied, the NP before any tenseless verb must be deleted (Rule 12). The rule is completely general, and its application is obligatory. Clearly the device of a deleted tense marker used as a cue to relate a series of rules (in this case the proper realization or deletion of a noun phrase before an embedded gerund or infinitive) simplifies the statement of conditions on individual rules of a derivation, since this last rule (Rule 12) can obligatorily apply to any remaining forms which the cue claims to be part of the derivation. In a similar manner, any remaining tenseless verb to which a ting has not been affixed must obligatorily be converted into an infinitive as follows:

#### Rule 7. INFINITIVE FORMATION

|      |             |                        |
|------|-------------|------------------------|
| sent | sent        |                        |
| [ A  | [ V X ] B ] |                        |
| 1    | 2 3 4       | $\Rightarrow$          |
|      |             | 1, <u>to</u> + 2, 3, 4 |

This rule completes the derivation of Instrument and Object clauses. In summary, Instrument clauses of "call to mind" verbs can be realized only as gerund phrases (with or without a possessive NP) when an Agent is present, but otherwise they may appear as that-clauses, infinitive phrases (with or without a raised "subject"), or gerund phrases (with or without a possessive NP). Object clauses can appear as infinitive phrases without raised "subjects" or as gerund phrases.

In the derivations of Object phrases discussed above, the optional realization of the embedded sentence as an infinitive phrase or as a gerund phrase can change the meaning of the surface sentence. Consider, for example, the following sentences:

- (13) a. Betty remembered to buy the groceries.  
       b. Betty remembered buying the groceries.

The focus of (13a) is upon Betty's action which occurred as a result of her remembering to do that thing. In (13b), the focus is upon Betty's memory of an act with no comment implicit upon why the act was done. The distinct focus of these two sentences is even more pronounced in sentences with a verb in the future:

- (14) a. Betty will remember to buy the groceries.  
 b. Betty will remember buying the groceries.

In (14a), Betty has clearly not yet done anything. Sentence (14b), however, is ambiguous with respect to whether the groceries have been bought or not, expressing only the certainty of the Experiencer's remembering the event at some future time, after it has occurred. The same effect is apparent when the sentences are negated, though the distinction between the two past-tense sentences is even clearer:

- (15) a. Betty did not remember to buy the groceries.  
 b. Betty did not remember buying the groceries.  
 c. Betty will not remember to buy the groceries.  
 d. Betty will not remember buying the groceries.

In (15a) and (15c), Betty has not bought anything, while (15b) and (15d) are ambiguous in this respect.<sup>20</sup>

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<sup>20</sup>The implications of these different meanings is unclear. They both arise from the same deep structure through a series of related transformations, and there seems to be no neat way of constraining them syntactically.

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The rules in the derivation discussed in this section must be ordered in the sequence in which they have been presented. This is a formal device only, and should not be taken as a claim that Gerund Formation, for example, was somehow a "deeper" or more basic operation than Infinitive Formation. Tense Erasure was posited as the initial transformation in the derivation, even though this operation could be accomplished just as easily in conjunction with modification of either the subject NP or the verb of an embedded clause. The initial position of this transformation in the derivation and its subsequent use as a cue for remaining transformations simply claims that this erasure is related in some unexplained way to both subject and verb modification of embedded clauses. One form of order necessarily arises from this device. The inter-relationship between the realization of the embedded verb (as infinitive or gerund) and the corresponding treatment of its subject (for example, that a possessive NP can appear only before the gerund) gives rise to another form of order among these rules. This type of ordering determines, for example, the Structural Description of Rule 3, Subject Raising I, and of Rule 5, Possessive Formation. These two rules must inter-relate with Rule 2, Gerund Formation, and Rule 7, Infinitive Formation, but the same relationship could be shown by transposing the two verbal modification rules and modifying the subject modification rules accordingly. In this new ordering, the structural description of the



verb modification rules would be unchanged:

Rule A. INFINITIVE FORMATION

$$\begin{array}{c} \text{Cq sent} \\ [ \quad [ \text{NP V X} ] ] \\ \quad \quad 1 \quad 2 \quad 3 \end{array} \Rightarrow 1, \underline{\text{to}} + 2, 3$$

Rule D. GERUND FORMATION

$$\begin{array}{c} \text{sent sent} \\ [A \quad [ \quad \text{V X} ] \quad B] \\ \quad 1 \quad \quad 2 \quad 3 \quad 4 \end{array} \Rightarrow 1, 2 + \underline{\text{ing}}, 3, 4$$

As a result of this transposition, the structural description of the two subject modification rules would have to be changed as follows:

Rule B. SUBJECT RAISING I

$$\begin{array}{c} \text{Cq sent} \\ [ \quad [ \text{NP } \underline{\text{to}} + \text{V X} ] ] \\ \quad \quad 1 \quad \quad 2 \quad 3 \end{array} \Rightarrow \begin{array}{c} \text{Cq sent} \\ [ \quad [ 1 [ 2 \quad 3 ] ] ] \end{array}$$

Rule C. POSSESSIVE FORMATION

$$\begin{array}{c} \text{Cq sent} \\ [ \quad [ \text{NP V X} ] ] \\ \quad \quad 1 \quad 2 \quad 3 \end{array} \Rightarrow 1 + [\text{POSSESSIVE}], 2, 3$$

Clearly the ordering of these rules has no descriptive power, since either order gives the proper output. The rule order adopted in the text facilitates statement of the conditions on Rules 2 and 7, somewhat.<sup>21</sup> Except in the case of Subject Raising II and subsequent

<sup>21</sup>perhaps better understanding of the identity conditions between embedded clauses, and NP fillers in the higher sentence would lead to some definitive ordering of these rules (see p. 54). Another possibility is that all the operations in this derivation occur simultaneously, and thus no real order exists among the rules.

compliment attachment rules, the ordering of this entire derivation with respect to the other transformational rules seems relatively unimportant, since the changes take place within the case node brackets and therefore are not affected by manipulation of this case within the higher sentence.

### Summary of Rules

#### Rule 1. TENSE ERASURE

$$\begin{array}{c} \text{Cq sent} \\ [ \quad [ \text{NP} \quad [ \text{TENSE} ] \text{V X} ] ] \\ \quad \quad \quad 1 \quad \quad \quad 2 \quad \quad \quad 3 \quad 4 \end{array} \Rightarrow 1 \emptyset 3 4$$

#### Rule 2. GERUND FORMATION

$$\begin{array}{c} \text{Cq sent} \\ [ \quad [ \text{NP V X} ] ] \\ \quad \quad \quad 1 \quad 2 \quad 3 \end{array} \Rightarrow 1, 2 + \text{ing}, 3$$

#### Rule 3. SUBJECT RAISING I

$$\begin{array}{c} \text{Cq sent} \\ [ \quad [ \text{NP V X} ] ] \\ \quad \quad \quad 1 \quad 2 \quad 3 \end{array} \Rightarrow \begin{array}{c} \text{Cq sent} \\ [ \quad [ 1 [ 2 3 ] ] ] \end{array}$$

#### Rule 4. SUBJECT RAISING II

$$\begin{array}{c} \text{obj sent nom} \\ \text{V (NP)} \quad [ \quad [ \quad [ \text{X} ] \text{SENT} ] ] \text{X} \\ \quad \quad \quad 1 \quad \quad \quad \quad \quad \quad 2 \quad \quad \quad 3 \quad \quad \quad 4 \end{array} \Rightarrow 1 \overset{0}{[ 2 ]} 3 4$$

#### Rule 5. POSSESSIVE FORMATION

$$\begin{array}{c} \text{Cq sent} \\ [ \quad [ \text{NP V} + \text{ing X} ] ] \\ \quad \quad \quad 1 \quad \quad \quad 2 \quad \quad \quad 3 \end{array} \Rightarrow 1 + [\text{POSSESSIVE}], 2, 3$$

#### Rule 6. EQUI-NP DELETION

$$\begin{array}{c} \text{Cq} \quad \quad \quad \text{Cq sent} \\ [ \text{NP}_1 ] \text{X} \quad [ \quad [ \text{NP}_2 \text{V} (+ \text{ing}) \text{Y} ] ] \\ \quad \quad \quad 1 \quad \quad \quad \quad \quad \quad 2 \quad \quad \quad 3 \end{array} \Rightarrow 1 \emptyset 3$$

Conditions:  $\text{NP}_1 = \text{NP}_2$

$\text{NP}_2 \neq [+possessive]$

#### Rule 7. INFINITIVE FORMATION

$$\begin{array}{c} \text{sent sent} \\ [ \text{A} \quad [ \text{V X} ] \text{B} ] \\ \quad \quad \quad 1 \quad \quad \quad 2 \quad 3 \quad 4 \end{array} \Rightarrow 1, \text{to} + 2, 3, 4$$

## Rule 8. REQUIRED COREFERENCE DELETION

$$\begin{array}{c} V \\ [ C_i = C_j ] C^X C_j X \\ 1 \quad 2 \quad 3 \quad 4 \end{array} \Rightarrow 1 \quad 2 \quad \emptyset \quad 4$$

## Rule 9. EXPERIENCE SHUNTING

$$\begin{array}{c} V E X \\ 1 \quad 2 \quad 3 \end{array} \Rightarrow \begin{array}{c} \text{sent} \quad \text{sent} \\ [ \quad [ 1 \quad 3 ] \quad 2 ] \end{array}$$

## Rule 10. PSYCH-MOUMENT

$$\begin{array}{c} V E C X \\ 1 \quad 2 \quad 3 \quad 4 \end{array} \Rightarrow 1 \quad 3 \quad 2 \quad 4$$

## Rule 11. ACCUSATIVE MARKING

$$\begin{array}{c} C \\ V C^X [ \frac{1}{2} X ] Y \\ 1 \quad 2 \quad 3 \end{array} \Rightarrow 1 \quad \begin{array}{c} \text{acc} \\ [ 2 ] \end{array} 3$$

Condition:  $C_i = E, O, G$  (in order)

## Rule 12. NOMINATIVE MARKING

$$\begin{array}{c} C \\ V [ \frac{1}{2} X ] Y \\ 1 \quad 2 \quad 3 \end{array} \Rightarrow 1 \quad \begin{array}{c} \text{nom} \\ [ 2 ] \end{array} 3$$

## Rule 13. SUBJECT FORMATION

$$\begin{array}{c} \text{sent} \\ [ V \text{ NOM } X ] \\ 1 \quad 2 \quad 3 \end{array} \Rightarrow \begin{array}{c} \text{sent} \quad \text{sent} \\ [ 2 \quad [ 1 \quad 3 ] ] \end{array}$$

## Rule 14. OBJECT FORMATION

$$\begin{array}{c} \text{NOM } V (C) \text{ ACC } X \\ 1 \quad 2 \quad 3 \quad 4 \quad 5 \end{array} \Rightarrow 1 \quad \begin{array}{c} V \\ [ 2 \quad 4 ] \end{array} 3 \quad 5$$